

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

REC'D 27 JAN 2006

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To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/GB2005/050167

International filing date (day/month/year)
29.09.2005

Priority date (day/month/year)
30.09.2004

International Patent Classification (IPC) or both national classification and IPC
G09G3/32

Applicant
CAMBRIDGE DISPLAY TECHNOLOGY LIMITED

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/GB2005/050167

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/GB2005/050167

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	4,6,8,10,11,12,13,24
	No: Claims	1,2,3,5,7,9,14,15,16,17,18,19,20,21,23,25
Inventive step (IS)	Yes: Claims	-
	No: Claims	4,6,8,10,11,12,13,24
Industrial applicability (IA)	Yes: Claims	1-25
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Reference is made to the following documents:

D1: EP 1 408 479 A2

D2: EP 0 541 295 A2

2. Novelty.

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1, 17, 19, 20 and 25 is not new in the sense of Article 33(2) PCT.

Claim 1.

The document D1 discloses (the references in parentheses applying to this document):

A method of driving an emissive display (see paragraph 70 and also fig.15 and fig.16), the display comprising a plurality of pixels each addressable by a row electrode and a column electrode (see fig.16), the method comprising:

- ▶ **driving a plurality of said column electrodes with a first set of column drive signals; and**
- ▶ **driving two or more of said row electrodes with a first set of forward bias row drive signals at the same time as said column electrode driving with said column drive signals (see paragraphs 170-179 and fig.7: during scan period 3, row 2 is fully illuminated and row 3 is partially illuminated); then**
- ▶ **driving said plurality of column electrodes with a second set of column drive signals; and**
- ▶ **driving said two or more row electrodes with a second set of forward bias row drive signals at the same time as said column electrode driving with said second column drive signals (see paragraphs 170-179 and fig.7: during scan period 4, row 2 is partially illuminated and row 3 is fully illuminated).**

Claim 17 (and its dependent claim 18).

See fig.5 of D1 associated with paragraphs 129-133: the processor control code implementing the instructions of the diagram of fig.5 is written in a CPU located in the

block 107 of fig.1.

Claim 19.

See OLED display driver in fig.15 of D1.

Claim 20.

The apparatus features of claim 20 correspond to the method features of claim 1.
The comments raised for claim 1 apply therefore mutatis mutandis to claim 20.
The subject-matter of claim 20 is therefore known from D1.

Claim 25.

D2 discloses (see page 3/line 18 to page 4/line 18 in association with fig.1 and fig.4) a method for assigning an intensity to the white subpixel (based on the minimum value of RGB) that is subtracted from the intensity of each of the R, G and B intensities.
When this method is applied to an OLED display (see page 9/lines 46-47), it is implicit that the lifetime and/or the energy consumption will be improved (by reducing the burden on the blue subpixel for example).

3. Inventive step.

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 24 does not involve an inventive step in the sense of Article 33(3) PCT.

The document D1 is regarded as being the closest prior art to the subject-matter of claim 24.

Assessment of claim 24.

Integrating drivers and processing circuitry on a chip having an aspect ratio of 10:1 is a mere possibility that the skilled would select according the cost of the function, to the available area,...

to circumstances, compare each luminance to be delivered for each scanning period to a threshold, without exercise of inventive skill.

Claim 9 (known from D1).

PWM is a technique used in the method of D1 (see paragraph 62).

Claims 10, 11 and 22 (not inventive).

Starting from the embodiment illustrated by fig.7 (see also paragraphs 173-175) of D1 and having made the choice of implementing current sources in the data driver 344 of fig.16 for delivering the data to each column, the skilled person would implement, in the scan driver 343 of fig.16 a current division technique for obtaining the same ratios than obtained by VS1 and VS2 in the existing embodiment (the centre row can reach the full luminance and the upper/lower rows can reach half of the full luminance), without exercise of inventive skill.

Claims 12 and 13 (not inventive).

Designing a row for which all the subpixels are of the same colour is a mere choice that the skilled person would choose when confronted with the problem of implementing the pixel setup for a RGB colour display.

Claim 14 (known from D1).

See fig.7 of D1: between two consecutive scanning periods (scanning periods 3 and 4 for example), two common row electrodes are selected; in each of these scanning periods, these two row electrodes are included in a set of three adjacent row electrodes.

Claim 15 (known from D1).

See fig.7 of D1: a 1st set of driving signals is applied during scanning period a, a 2nd set is applied during scanning period a+1 and 3rd set is applied during scanning period a+2.

Claims 16 and 23 (known from D1).

The OLED display is mentioned in fig.15 of D1.

Claim 21 (known from D1).

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See fig.7: during a scanning period, more than one row is selected.